The American Association of Colleges of Pharmacy was accepted as an associated society.

The Missouri Academy of Science was accepted as an affiliated academy with one representative in the council without any financial arrangement, in accordance with action taken in the recent affiliations of other academies.

The Institute of Aeronautical Science was accepted as an affiliated society with one representative in the council.

The Society for Research on Meteorites was accepted as an associated society.

The American Division of the International Association for Dental Research was accepted as an affiliated society with one representative in the council.

The chairman announced that on request of the special committee on research fellows the report of that committee now pending before the council had been withdrawn.

The permanent secretary announced the appointment by the president of Professor A. P. Wills as the representative of the association on the Sectional Committee on Electric and Magnetic Magnitudes and Units of the American Standards Association.

The permanent secretary presented a printed copy of the address by Dr. Mark H. Liddell on "A New Theory of Sound," read at the Pittsburgh meeting. This is the final report of a research made possible by a grant from the association several years ago.

The permanent secretary announced that railroad rates for the Minneapolis meeting have been limited by the traffic association to bona-fide members (and their families) of the association and its associated societies.

The committee adjourned, to meet in Minneapolis on Monday, June 24, at 9:00 A. M.

HENRY B. WARD,
Permanent Secretary

STATE ACADEMIES

THE PENNSYLVANIA ACADEMY OF SCIENCE

THE eleventh annual meeting of the Pennsylvania Academy of Science was held on April 19 and 20. The academy was the guest of Dickinson College, Carlisle, Pennsylvania. Titles of 59 papers and demonstrations were included on the program and, except for the brief business meeting, these filled the session. The annual dinner on Friday evening was followed by the presidential address, "The First Decade of the Pennsylvania Academy of Science," by Professor S. H. Derickson. Dr. William W. Cort, of the Johns Hopkins University, guest speaker of the evening, addressed the society on "Biological Studies on Human Parasites." A total attendance of 103 members and guests registered, besides 41 members of the Junior Academy. A representation of 35 physicists from the state met simultaneously, partly as a sectional group and partly in joint conference with the main body of the academy. The following officers were elected for 1935–1936:

President: Professor Edgar T. Wherry (botany), University of Pennsylvania.

Vice-President: Dr. T. D. Cope (physics), University of Pennsylvania.

Secretary: Dr. T. L. Guyton (entomology), Pennsylvania Department of Agriculture.

Assistant Secretary: Dr. V. Earl Light (biology), Lebanon Valley College.

Treasurer: Professor H. W. Thurston, Jr. (botany), Pennsylvania State College.

Editor: R. W. Stone (geology), Pennsylvania Topographic and Geologic Survey.

Press Editor: Dr. Bradford Willard (geology), Pennsylvania Topographic and Geologic Survey.

The 1935 summer meeting and field trip is to be held in the Poconos in August. The time and place of the 1936 annual meeting are to be announced subsequently.

BRADFORD WILLARD,
Press Secretary

THE ALABAMA ACADEMY OF SCIENCE

THE twelfth annual meeting of the Alabama Academy of Science was held at State Teachers College, Florence, Alabama, on Friday and Saturday, April 12 and 13, 1935.

There were ninety-nine members and guests registered, fifty-two papers presented in four sections and three demonstrations given. At the banquet on Friday evening Dr. Russell S. Poor, Birmingham-Southern College, gave the presidential address on "The South's Position in the Mineral Industry." Dr. George M. Hall, president of the Tennessee Academy of Science, was an honored guest.

Following the banquet there was a reception during which a demonstration with ultra-violet light of fluorescent minerals of Alabama was given by Dr. David L. De Jarnette, curator of the Alabama Museum of Natural History, and his assistant, James T. De Jarnette.

On Saturday morning Dr. Walter B. Jones, state geologist, conducted a geological field trip through the Muscle Shoals district. At noon an old-time Southern barbecue was given on the campus of State Teachers College by President H. J. Willingham of the college. In the afternoon an industrial trip under the direction

of Professor Floyd F. Cunningham, of State Teachers College, was taken to the T. V. A. developments. Among the places of interest visited were Nitrate Plant No. 2, which T. V. A. officials very kindly explained, the finished Wilson Dam and the new Wheeler Dam now under construction.

On Saturday morning the Alabama Junior Academy of Science held its third annual meeting at the same place. Twelve high schools from all parts of the state were represented.

The following officers were elected for the year 1935–36:

President, A. G. Overton, Alabama By-Products Corporation, Tarrant; *President-elect*, Walter B. Jones, state geologist, University; *Vice-president* (Biology and Medical Science), C. M. Farmer, State Teachers College, Troy; *Vice-president* (Chemistry, Physics and Mathematics), B. F. Clark, Birmingham-Southern College, Birmingham; *Vice-president* (Geology, Anthropology and Archeology), T. G. Andrews, University of Alabama; *Vice-president* (Industry and Economics), W. M. Mobley, Alabama By-Products Corporation, Tarrant; *Editor of the Journal*, E. V. Jones, Birmingham-Southern College, Birmingham; *Secretary*, Septima Smith, University of Alabama; *Treasurer*, B. F. Clark, Birmingham-Southern College, Birmingham; *Councillor to the A. A. A. S.*, P. H. Yancey, Spring Hill College, Mobile.

The next meeting will be held at the Alabama Polytechnic Institute, Auburn, Alabama, some time in March, 1936.

P. H. YANCEY

THE TENNESSEE ACADEMY OF SCIENCE

THE spring meeting of the Tennessee Academy of Science for the year 1935 was held on April 26 and 27 at the Reelfoot Lake Biological Station. There were three sessions on Friday and two on Saturday in the laboratory building. Headquarters were at the Walnut Log Lodge, four hundred yards away. Excursions were taken on Saturday afternoon on and around the lake.

At the meeting on Saturday evening, Dr. George M. Hall, president, presiding, Dr. A. R. Middleton, professor of biology, University of Louisville, secretary of the Kentucky Academy of Science, gave an address on "A Summer in Honduras."

Sixteen of the twenty-four papers were by members of faculties of schools. Two were by members of the academy residing outside of Tennessee—Dr. Mary Minerva Steagall, head of the department of zoology, Southern Illinois State Normal University, Carbondale, Illinois, and Dr. Emily Barry Walker, head of the science department, East Texas State Teachers College, Commerce. Schools in Tennessee represented were: in East Tennessee, the University of Tennessee, Knoxville, and the State Teachers College, Johnson City; in Middle Tennessee, Vanderbilt University and George Peabody College, Nashville; in West Tennessee, Southwestern and State Teachers College, Memphis, Lambeth College, Jackson, Freed-Hardeman College, Henderson. Departments of science leading in the number of papers were: biology 5, geology 4, public health 3.

The academy holds two meetings each year—one at Nashville in the fall and one either in East or West Tennessee in the spring. Reelfoot Lake is in the northwest corner of the state. The attendance of between forty and fifty members at the meeting was consequently fully as many as expected. This far-away place was chosen for the meeting on account of the location there of the Biological Station, which is under the control and management of the Tennessee Academy of Science. Dr. Middleton, who delivered the address on Saturday evening, is a member of the council of the American Association for the Advancement of Science.

The general appropriation bill passed by the House at the recent session of the Legislature carried an appropriation of $2,500 to the academy to be expended during the biennium 1935–1937 for the benefit of the station, but the Senate postponed consideration of the bill to an extra session of the Legislature in May or June, thus embarrassing the academy in arranging for work at the station this summer.

J. T. MCGILL,
Secretary-Treasurer

THE MINNESOTA ACADEMY OF SCIENCE

WITH an attendance of three hundred the Minnesota Academy of Science held its third annual meeting at the University of Minnesota on Saturday, April 13. The program contained 8 papers, as follows: "Fifty Years' Experience in the Weather Bureau," Mr. U. G. Purssell, formerly head of Minneapolis Weather Bureau; "Scientific Concentrates," Dr. W. C. Croxton, State Teachers College, St. Cloud; "The Rhythm of Blossoming in Flowering Plants with Special Reference to Hay Fever," Dr. C. O. Rosendahl and A. O. Dahl, University of Minnesota; "Soil Erosion Demonstration Areas in Southeastern Minnesota," R. H. Davis, Soil Erosion Service, U. S. Department of the Interior; "Shelterbelts—Futile Dream or Attainable Benefit," Dr. J. E. Aikman, senior botanist, Lake States Forest Experiment Station; "A Configurational Approach to the Study of Sound," Dr. A. R. Root, Hamline University; "Utilization of Some Farm Wastes," Dr. C. A. Mann, University of Minnesota; "Milking the Rubber Tree," Dr. E. C. Stakman, University of Minnesota.

The academy voted to cooperate with the American

Association for the Advancement of Science at the time of its meeting in Minneapolis.

The following officers were elected:

President, Dean Edward M. Freeman, University of Minnesota.

Vice-president, Dr. L. M. Gould, Carleton College.

Secretary-treasurer, H. K. Wilson, University of Minnesota.

Councilor, Dr. L. H. Powell, Director of the St. Paul Institute of General and Applied Science.

The next annual meeting will be held in Northfield, Minnesota, with Carleton and St. Olaf Colleges as hosts.

H. K. WILSON,
Secretary

SCIENTIFIC APPARATUS AND LABORATORY METHODS

ON AN ARRANGEMENT FOR STUDYING THE CONDITIONS WITHIN DIFFUSION LAYERS

VERY few experimental studies are concerned with the manner in which the concentrations and electrical potential are built up in the boundary between two different solutions, across which boundary diffusion takes place. From the theoretical side the main interest has so far been the diffusion or liquid junction potential. In order to calculate this potential Planck[1] and Henderson[2] have developed theories which differ in assumptions regarding the ionic composition in the diffusion layer (boundary); Planck's theory, derived from Nernst's[3] treatment of electrolyte diffusion, claims that individual ions may under certain circumstances become accumulated in the diffusion layer in higher concentrations than are present in the two surrounding solutions (*cf.* Plettig,[4] Planck[5]). Henderson, on the other hand, assumes that all ionic concentrations fall off linearly in the boundary. The experimental efforts to settle which theory is valid have, as far as the author has been able to find, used only measurements of the electrical potential (for literature *cf.* Plettig and Planck). The question is hardly settled as yet.

To judge from the theories, however, the evaluation of the ionic concentration distributions within the diffusion layer should offer more conclusive evidence than can be obtained from the potential measurements, which, as a rule, should theoretically not differ much.

Trying to measure the concentration distribution the author first used a diffusion boundary consisting of an agar plug in a glass tube. On the two sides of the plug large volumes of the stirred solution were placed. After a sufficiently long time the plug was sliced in parallel sections and analyses were performed. This method, employed to some extent by previous workers on the "Liesegang structures," however, did not prove to be convenient for observing the development of the final steady state, nor was it good for following the behavior of the potential within the layer.

In order to obviate these disadvantages the following arrangement was adopted: A number of Cellophane or collodion sheets (5 to 9) were clamped between suitable washers in such a manner that about 10 cc of solution could be placed in each of the "chambers" so obtained. The two outside "chambers" were fed continuously with the solutions under investigation by means of a special air-lift suction pump. The content of each "chamber" was stirred. With microanalyses on samples from the "chambers" (apparently corresponding to different surface elements in the diffusion layer) the building up of the concentrations and potential could be conveniently followed. (It should be emphasized that this multimembrane arrangement is not equivalent to one homogeneous diffusion layer from a kinetic point of view. But when the time factor disappears, *i.e.*, in a stationary state, the conditions in the "chambers" correspond to those in the interfaces of a "sliced" homogeneous diffusion layer.) When a 'steady state' was attained (generally within 24 hours) the results of the experiments showed conclusively in all hitherto investigated cases that the behavior of the ionic concentrations, at least qualitatively, was in accord with the Planch-Plettig predictions.

This "multimembrane" method has also been useful in investigations of cases of diffusion where chemical reactions take place.

The details of the results here referred to and some attempts to discuss the biological importance of these rather peculiar conditions in a "membrane" will be published elsewhere.

TORSTEN TEORELL

THE LABORATORIES OF
THE ROCKEFELLER INSTITUTE
FOR MEDICAL RESEARCH
NEW YORK CITY

[1] M. Planck, *Wied. Ann.*, 40: 561, 1890.
[2] P. Henderson, *Z. physik. Chem.*, 59: 118, 1907.
[3] W. Nernst, *Z. physik. Chem.*, 2: 617, 1888; 4: 154, 1889.
[4] V. Plettig, *Ann. Physik.*, 5: 735, 1930.
[5] M. Planck, *Sitzb. preuss. Akad. Wiss.; Physik.-math. Klasse*, 1930, 367; 1931, 113.

A SIMPLE RELIABLE TIME CLOCK

IT is not infrequent that workers in physiological laboratories supplied with direct current, where syn-